

REMARKS

Claims 1-10 and 22-24 are pending in this application. By this Amendment, the specification and claims 1 and 10 are amended, claims 11-21 are cancelled and claims 22-24 are added.

An Election of Species was required in this application. Accordingly, Applicants elected Fig. 5, and claims 1-10 and 22-24 read on elected Fig. 5. Applicants thus cancel claims 11-21 based on the Election of Species. Applicants reserve the right to file one or more divisional applications based on the non-elected species.

Claim 10 was objected to based on an informality. By this Amendment, claim 10 has been amended. It is respectfully requested that the objection be withdrawn.

Applicants appreciate the allowance of claims 2-10.

Claim 1 was rejected under 35 U.S.C. §103(a) over Miyashita et al. (Miyashita), U.S. Patent No. 5,502,470, in view of Hirsh et al. (Hirsh), U.S. Patent No. 6,179,978. The rejection is respectfully traversed.

Miyashita and Hirsh fail to disclose or suggest a process of manufacturing a nozzle plate with an unmasking step of removing a resist from nozzle holes after forming a non-wetting layer, as recited in claim 1.

Miyashita discloses the opposite of claim 1 because Miyashita discloses a process of manufacturing a nozzle plate with an unmasking step of removing the resist from the nozzle holes before forming the non-wetting layer. In particular, Miyashita discloses the steps of (1) forming a resist layer 11 around a nozzle plate 33 through dip coating (Fig. 7B), (2) removing the resist layer 11 such that only the reverse side (inside surface that is opposite to an outside surface that is to be opposed to a print media) of the nozzle plate 33 is covered with the resist layer (Fig. 7D), and (3) dissolving the nozzle plate 33 in a fluorocarbon solvent (Fig. 7E) to form a water-repellent layer 23 around the nozzle plate 33 (col. 4, lines 10-24 and col. 22,

lines 20-39). The remaining embodiments of Miyashita also similarly remove the resist layer 11 before forming a non-wetting layer.

Accordingly, Miyashita fails to disclose or suggest an unmasking step of removing a resist from nozzle holes after forming a non-wetting layer, as recited in claim 1. Miyashita instead disclose an unmasking step of removing the resist layer 11 from the nozzle holes (as shown in Fig. 7D) before forming the water-repellant layer.

Hirsh fails to overcome the deficiencies of Miyashita because Hirsh discloses a process of manufacturing a nozzle plate that is opposite to Miyashita. In Hirsh, the nozzle plate is formed by (1) forming a column 150 (that defines the latter formed nozzles holes) of resin material on a masking layer 110 (Fig. 4), (2) forming a non-wetting layer 90 on the masking layer 110 and around the column 150 (Fig. 5), (3) forming a layer 160 of nozzle plate material on the non-wetting layer 90 and around the column 150 (Figs. 6 and 7), and (4) removing the column 150 and the masking layer 110 from the non-wetting layer 90 and the layer 160 (Fig. 8). Hirsh thus forms a nozzle plate 60 with a layer 160 and a non-wetting layer 90.

Hirsh thus fails to disclose the masking step of claim 1 because Hirsh fails to apply a resist to the inside surface (upper surface of Fig. 8) of the layer 160. Hirsh also fails to disclose the non-wetting-layer forming step of claim 1 because Hirsh forms the layer 160 (substrate of claim 1) on the non-wetting layer 90. In other words, Hirsh cannot form the non-wetting layer 90 on the outside surface (which is to opposed to a print media (lower surface of Fig. 8)) of the layer 160 (substrate) because the layer 160 does not exist when the non-wetting layer 90 is formed.

Although Hirsh removes the column 150 of resist from the nozzle holes (defined by the inner circumference of layer 160) after forming the non-wetting layer 90, there is no teaching, suggestion or motivation to perform this step in Miyashita which discloses a process

that is opposite to Hirsh. Miyashita first forms the substrate where Hirsh forms the substrate after forming the non-wetting layer 90.

Miyashita also discloses a process of forming the water-repellant layer 23 directly on the nozzle plate 33 and in the nozzles holes. There is no teaching, motivation or suggestion in Miyashita or Hirsh to replace Miyashita's water-repellant layer 23 with Hirsh's column 150 of resist when Miyashita discloses a process that is opposite to Hirsh.

Accordingly, Miyashita and Hirsh fail to disclose or suggest all of the features recited in claim 1. It is respectfully requested that the rejection be withdrawn.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Scott M. Schulte
Registration No. 44,325

JAO:SMS/ccs

Attachment:

Petition for Extension of Time

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OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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